

1. A method of implementing the address resolution protocol (ARP) in a computing platform having a plurality of processors, comprising:

- defining a topology of an Ethernet network to be emulated on the computing platform, the topology including processor nodes and a switch node;
- assigning a set of processors from the plurality to be processors to act as the processor nodes;
- assigning a processor to act as the switch node;
- assigning virtual MAC addresses to each processor node of the emulated Ethernet network;
- allocating virtual interfaces over an underlying physical network to provide direct software communication from each processor node to each other processor node, wherein each virtual interface has a corresponding identification;
- a processor node communicating an ARP request to the switch node, wherein the ARP request includes an IP address;
- the switch node communicating the ARP request to all other processor nodes in the emulated Ethernet network;
- a processor node that is associated with the IP address issuing to the switch node an ARP reply that contains the virtual MAC address of the processor node associated with the IP address;
- the switch node receiving the ARP reply and modifying the ARP reply to include a virtual interface identification for a virtual interface that the processor node issuing the ARP request should use for subsequent communication with the processor node associated with the IP address.

2. The method of claim 1 wherein the underlying physical network is a point-to-point mesh connecting the plurality of processors.

3. The method of claim 1 wherein a subset of the processors are organized as a cluster and wherein one of the processors in the cluster is a load balancing processor node, and wherein, when any processor in the cluster issues an ARP request, the switch node

modifies the ARP reply to include the virtual interface identification for the load balancing processor node.

4. The method of claim 1 wherein the switch node is in communication with an external IP network, and wherein the act of communicating an ARP reply includes identifying that the ARP reply is from a processor node in the platform.
5. An address resolution protocol (ARP) system, comprising:
  - a computing platform having a plurality of processors connected by an underlying physical network;
  - logic, executable on one of the processors, to define a topology of an Ethernet network to be emulated on the computing platform, the topology including processor nodes and a switch node;
  - logic, executable on one of the processors, to assign a set of processors from the plurality to be processors to act as the processor nodes;
  - logic, executable on one of the processors, to assign virtual MAC addresses to each processor node of the emulated Ethernet network;
  - logic, executable on one of the processors, to allocate virtual interfaces over the underlying physical network to provide direct software communication from each processor node to each other processor node, wherein each virtual interface has a corresponding identification;
  - each processor node having ARP request logic to communicate an ARP request to the switch node, wherein the ARP request includes an IP address;
  - the switch node including ARP request broadcast logic to communicate the ARP request to all other processor nodes in the emulated Ethernet network;
  - each processor node having ARP reply logic to determine whether it is the processor node associated with the IP address in an ARP request and, if so, to issue to the switch node an ARP reply, wherein the ARP reply contains the virtual MAC address of the processor node associated with the IP address;

the switch node including ARP reply logic to receive the ARP reply and to modify the ARP reply to include to include a virtual interface identification for the ARP requesting node.

6. The system of claim 5 wherein the underlying physical network is a point-to-point mesh connecting the plurality of processors.
7. The system of claim 5 wherein a subset of the processors are organized as a cluster and wherein one of the processors in the cluster is a load balancing processor node, and wherein the switch node includes logic to detect if an ARP reply from a processor node is from any processor in the cluster and, if so, to modify the ARP reply to include the virtual interface identification for the load balancing processor node.
8. The system of claim 5 wherein the switch node is in communication with an external IP network, and wherein the processor node ARP reply logic includes logic to identify that the ARP reply is from a processor node in the platform.